EPA ENERGY STAR Climate Controls

Stakeholder working meeting

RCCS Field Savings Metric

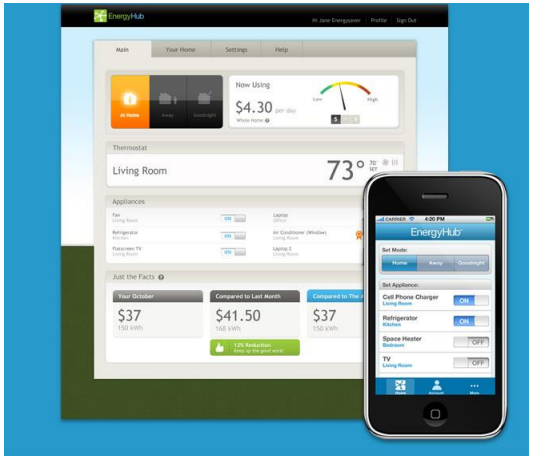
1/30/2015

Agenda

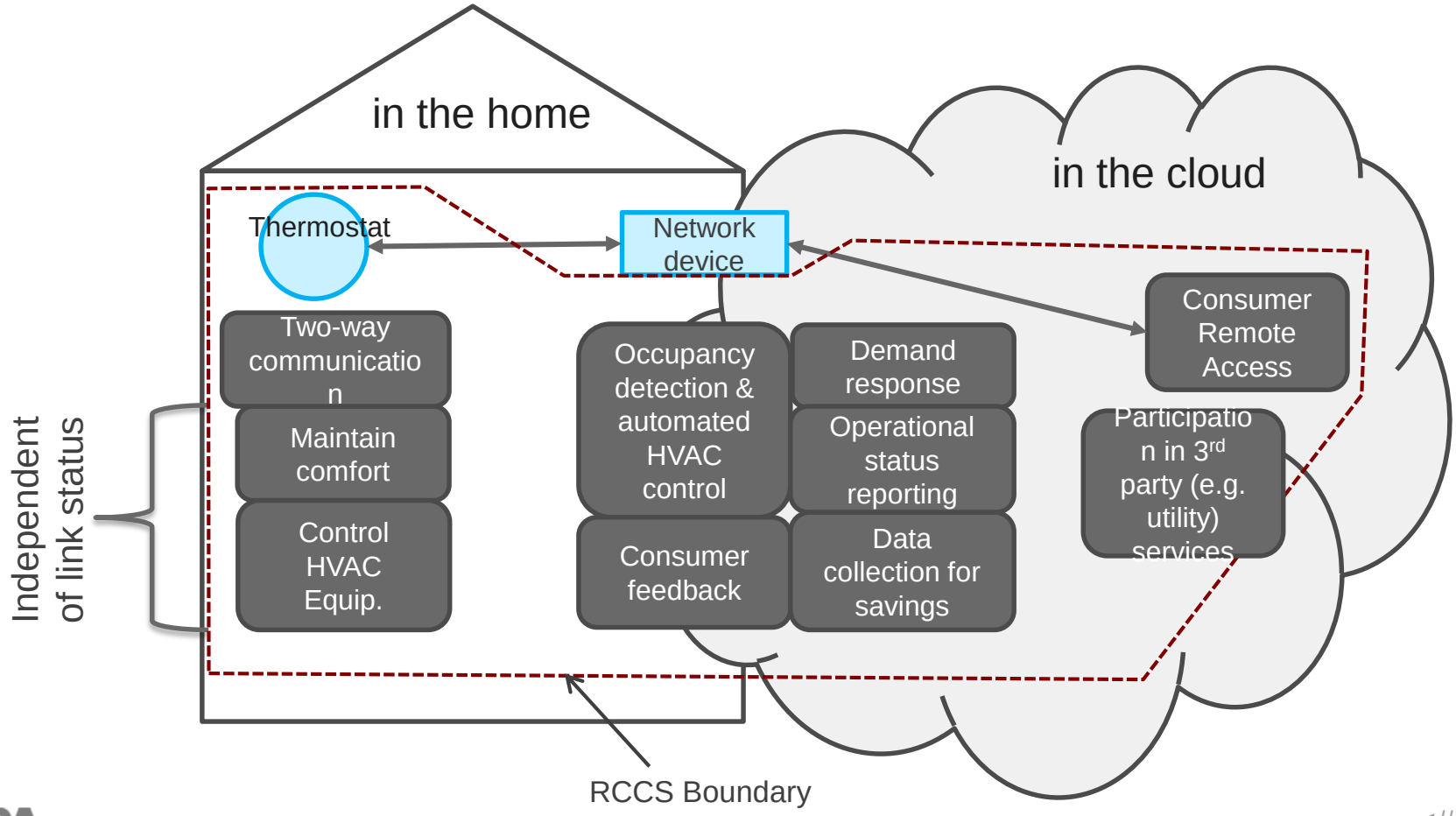
- Reminder of what EPA is aiming for, purpose of the meeting
- Administrative announcements
- Follow-on to 1/16 discussion of metric calculations
- Baselines
  - Jack Callahan, BPA
  - Michael Blasnik, Nest Labs
  - Discussion
- Agreed actions
- Parking lot

Introduction – A New Approach

- Large potential savings
- New product types & business models emerge
- Measuring RCCS savings being done today, but…
  - no standard methodology
  - savings claims vary widely



Blend of local hardware and cloud services provides RCCS capabilities



Program Outline

- Recognition for RCCSs that save energy in the field
- To earn the ENERGY STAR:
  - RCCS criteria that enables savings
  - Periodic reporting of savings
- Product includes service component
- ENERGY STAR Partner is service provider
- ~~Annual shipments~~ → Periodic field data
  - Calculate program emissions reductions
  - Serve as energy savings data for QPL

Step 1: Metric

- Ranks RCCSs based on field savings
- Uses data from RCCS or publically available
- Preserves consumer privacy
- Protects proprietary information
- Practical to calculate
- Activities to date
  - Framework 11/5/14; San Francisco meeting 11/19/14
  - Algorithmic framework 1/12/15; Stakeholder call 1/16/15
  - Stakeholder call and next algorithmic framework, 1/30/15

Administrative Announcements

- Working from email list for this group
  - Emails too frequent and weedy for full Climate Controls Stakeholder list
  - Will send out to full list for formal comments when ready
  - If you know someone who wants to be on the email list for this effort, please put them in touch with us
- Google Drive for passing documents back and forth – you should get an invitation.
- All EPA docs also available at energystar.gov.

Follow on to 1/16 meeting

- Discussed correlating run time to ΔT, or to a measure like heating degree days (HDD), but based on ΔT.
- EPA committed to send out several versions of algorithms for these methods.
- Versions now available on Google Drive, and posted on energystar.gov.
- EPA thanks the several stakeholders that sent in detailed comments on the previous document (1.12.2015 draft).

Follow on to 1/16 meeting, continued

- At some point EPA is going to provide open source code for this metric.
  - Stakeholders interested in writing their own? If so, can elements of it be open source?
- When we get to open source code, what programming language should be used?
- We are concerned that having stakeholders write their own code is duplicative and also introduces the possibility for spurious differences.

- Poll & brief discussion

Baselines

- Jack Callahan, BPA
- Michael Blasnik, Nest Labs
- Discussion

Discussion

- Re metric code
  - Provide method (test data set, e.g.) for testing other code
  - Python was the majority favorite
  - Share code on GitHub

Discussion

- Re baselines, 10th/90th set point
  - Miss savings from encouraging different comfort temp
  - Does it over-predict savings by ignoring pre-existing setback behavior?
  - Individuals who are less efficient when home would tend to score higher than those with the same setback temp but more savings comfort temp
  - Seasonal variation in set points (shoulder seasons) may bias results
  - Shoulder seasons: delta T and heating run time not correlated. If predictable, need other factors?
- 70% of low income homes (from nat'l weatherization project) showed no evidence of setback and average temperatures were over 70F.

Discussion

- In RBSA data, 70% of people have programmable thermostats, which is an increase.
- BPA analysis good for program savings, but is it useful for comparing products?
- Could RBSA or similar data be used to see what a "regular" home (without RCCS) would score
- Could use 10th/90th RCCS data averaged over all providers for a given region to come up with regional constant temperature baseline.
- Can we capture regional setback behavior as well? But then, we would define ourselves as no savings. Better to have a constant T baseline and take into account that the "average home" wouldn't score zero.

Discussion

- Averaging setpoints across providers would tend to average out systematic biases across providers.
- We could start by seeing if there are variations in average $90^{th}/10^{th}$ set points across providers, and for that matter across regions.
- If there are no systematic variations between providers of average $90^{th}/10^{th}$ percentile set points, then the per-home baseline won't give a different answer.
- If all providers use the same baseline per state/region, vendors that are better at encouraging comfort temperatures for efficiency would be rewarded.
- Ethan Goldman (VEIC) and Jack Callahan (BPA) showed some data analysis

Agreed upon actions

- Alan Meier LBNL to draft data request. Content:
  - A few states/regions (NE, NW, Texas?)
  - Are averages enough? Decile reporting? If not decile, then we need SOME information on the distribution
  - To decide:
    - Region(s) – specific states in different regions
    - Data handling and trimming (reporting period, other data quality issues)
    - What is being reported – set temp, indoor temp, run time?
      - In each home, 10th (summer), 90th (winter), average and std dev of set temp and indoor temp
      - Average each of these values across data sets (each data set defined by a provider and a region)
    - What distribution characteristics will be provided – decile, average, etc.
- RCCS providers to calculate and send in data, a month or more from today

Parking lot from 1/16

- Will providers use this method to make savings claims?
- Verification and gaming the system?
- Modulating system thermostats not eligible - market disadvantage?
- Does the customer base bias the metric results, aside from the qualities of the products?
- Add on today's parking lot items…

Contact Information

Abigail Daken
EPA ENERGY STAR Program
202-343-9375
daken.abigail@epa.gov

Doug Frazee
ICF International
443-333-9267
dfrazee@icfi.com